UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|---|---|---|---|---|
| 10/070,979 | 05/31/2002 | Pierre Dournel | S-99/37 | 4774 |

7590 02/05/2009

Connolly Bove
Lodge & Hutz
PO Box 2207
Wilmington, DE 19899-2207

| EXAMINER | |
|---|---|
| BUTLER, PATRICK NEAL | |
| ART UNIT | PAPER NUMBER |
| 1791 | |
| MAIL DATE | DELIVERY MODE |
| 02/05/2009 | PAPER |

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

| Office Action Summary | Application No. | Applicant(s) | |
|---|---|---|---|
| | 10/070,979 | DOURNEL, PIERRE | |
| | Examiner | Art Unit | |
| | Patrick Butler | 1791 | |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☒ Responsive to communication(s) filed on *06 November 2008*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) *14-36* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *14-36* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

## DETAILED ACTION

### *Claim Rejections - 35 USC § 102*

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 14, 17, 18, 24, 26-31, and 35 are rejected under 35 U.S.C. 102(b) as being anticipated by Corr et al. (International Publication No. WO 98/32787).

With respect to Claims 14, 18, 24, and 35, Corr teaches making extruding polystyrene closed cell foam exclusively (more than 80%) of 85:15 mixture of R-134a (1,1,1,2-tetrafluoroethane) and R-152a (1-1-difluoroethane) as the blowing agent (see page 8, line 24 through page 9, line 8). Such a combination provides for a 1-1-difluoroethane to 1,1,1,2-tetrafluoroethane ratio of 0.2, which is less than 3.5 and less than 4. Further additives are not required given their claimed optional presence.

With respect to Claim 17 and 26, Corr teaches the foam is exclusively (more than 90%) of 85:15 mixture of R-134a (1,1,1,2-tetrafluoroethane) and R-152a (1-1-difluoroethane) as the blowing agent (see page 8, line 24 through page 9, line 8).

With respect to Claim 27 and 29, Corr's foam is has a closed cell structure (more than 90% of closed cells) (see page 8, lines 9-11).

With respect to Claims 28, 30, and 31, given Smith teaches the same method steps as claimed, it would be expected that Smith's product would have the same thermal conductivity.

Claims 19, 20, 22, and 23 are rejected under 35 U.S.C. 102(b) as being anticipated by Smith et al. (US Patent No. 5,276,063).

With respect to Claims 19 and 20, Smith teaches making a closed cell foam using a composition of 1-1-difluoroethane, ethanol or methanol (an alcohol), and 1,1,1,2-tetrafluoro-ethane as blowing agents (see abstract; col. 3, line 4 through col. 4, line 12). Further additives are not required given their claimed optional presence.

Smith's list of suitable secondary blowing agents includes ethanol and methanol, and Smith's lists of suitable tertiary blowing agents include 1,1,1,2-tetrafluoro-ethane as blowing agents. Thus, the agent is anticipated. A genus does not always anticipate a claim to a species within the genus. However, when the species is clearly named, the species claim is anticipated no matter how many other species are additionally named. Ex parte A, 17 USPQ2d 1716 (Bd. Pat. App. & Inter. 1990) (See MPEP 2131.02).

With respect to Claims 22 and 23, 1-1-difluoroethane is present at 50 to 90% by weight (see col. 3, lines 4-8), and 1,1,1,2-tetrafluoro-ethane is present at less than 15% by weight (see col. 3, lines 28-33). Such a combination provides for a ratio of 3 to 6, which is at least 1.5 (Claim 22). While allowing for about 10% secondary blowing agent (see col. 3, lines 9-13), such a combination further provides for their collective presence to be 65-90%, which is more than 60% by weight (Claim 23).

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the

invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 14-36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Smith et al. (US Patent No. 5,276,063).

With respect to Claims 14, 18, and 24, Smith teaches making a closed cell foam using 1-1-difluoroethane and 1,1,1,2-tetrafluoro-ethane as blowing agents (see abstract; col. 3, lines 4-8; and col. 3, line 28 through col. 4, line 12). Further additives are not required given their claimed optional presence. Smith teaches 1-1-difluoroethane is present at 50 to 90% by weight (see col. 3, lines 4-8), and 1,1,1,2-tetrafluoro-ethane is present at less than 15% by weight (see col. 3, lines 28-33). Smith also allows for about 10% secondary blowing agent (see col. 3, lines 9-13). Such a combination provides for 1-1-difluoroethane and 1,1,1,2-tetrafluoroethane present at 65% and 15%.

Smith's list of suitable tertiary blowing agents includes 1,1,1,2-tetrafluoro-ethane as blowing agents. Thus, the agent is anticipated. A genus does not always anticipate a claim to a species within the genus. However, when the species is clearly named, the species claim is anticipated no matter how many other species are additionally named. Ex parte A, 17 USPQ2d 1716 (Bd. Pat. App. & Inter. 1990) (See MPEP 2131.02).

Alternatively, *Merck & Co. v. Biocraft Labs.* taught that a references that "discloses a multitude of effective combinations does not render any particular formulation less obvious" *Merck & Co. v. Biocraft Labs.*, 874 F.2d 804, 807, 10 USPQ2d 1843, 1846 (Fed. Cir. 1989). Thus, Smith's teaching of a multitude of effective combinations of blowing agents does not render any particular formulation of blowing agents less obvious.

Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to select 1,1,1,2-tetrafluoro-ethane among Smith's tertiary blowing agents since Smith's listing constitutes obvious combinations of blowing agents.

Smith does not appear to explicitly teach that the presence and ratio of 1-1-difluoroethane and 1,1,1,2-tetrafluoroethane is within the claimed range (e.g., more than 80%; at most 4).

However, in this regard, Smith teaches using blowing agents such as 1,1,1,2-tetrafluoro-ethane (HFC-134a) of low solubility and high vapor pressure decreases foam cell size (see col. 4, lines 18-51). As such, Smith recognizes that quantity of 1,1,1,2-tetrafluoro-ethane (HFC-134a), and thus presence and ratio of 1-1-difluoroethane and 1,1,1,2-tetrafluoroethane, is a result-effective variable. Since presence and ratio of 1-1-difluoroethane and 1,1,1,2-tetrafluoroethane is a result-effective variable, one of ordinary skill in the art would have obviously been motivated to determine the optimum presence and ratio of 1-1-difluoroethane and 1,1,1,2-tetrafluoroethane applied in the process of Smith through routine experimentation based upon achieving slightly smaller large cell foam. Such obvious quantity of 1,1,1,2-tetrafluoro-ethane (HFC-134a) is 17%. With 1-1-difluoroethane present at 65%, the combination would be 82%, which meets the claimed limitation of greater than 80%, and a ratio of 4, which meets the claimed limitation of at most 4.

With respect to Claims 15, 16, and 25, Smith's teaching of 1-1-difluoroethane present at 65% and the obviousness of 1,1,1,2-tetrafluoroethane present at 17% by

weight provides for a ratio of 4, which is at least 1.5 (Claim 15) and more than 2 (Claims 16 and 25).

With respect to Claims 17 and 26, Smith does not appear to explicitly teach that the presence of 1-1-difluoroethane and 1,1,1,2-tetrafluoroethane is within the claimed range (e.g., more than 90%).

However, in this regard, Smith teaches using blowing agents such as 1,1,1,2-tetrafluoro-ethane (HFC-134a) of low solubility and high vapor pressure decreases foam cell size (see col. 4, lines 18-51). As such, Smith recognizes that quantity of 1,1,1,2-tetrafluoro-ethane (HFC-134a), and thus presence 1-1-difluoroethane and 1,1,1,2-tetrafluoroethane, is a result-effective variable. Since presence of 1-1-difluoroethane and 1,1,1,2-tetrafluoroethane is a result-effective variable, one of ordinary skill in the art would have obviously been motivated to determine the optimum presence of 1-1-difluoroethane and 1,1,1,2-tetrafluoroethane applied in the process of Smith through routine experimentation based upon achieving slightly smaller large cell foam. Such obvious quantity of 1,1,1,2-tetrafluoro-ethane (HFC-134a) is 26%. With 1-1-difluoroethane present at 65%, the combination would be 91%, which meets the claimed limitation of more than 90%.

With respect to Claims 27 and 29, Smith's produced foam is greater than 90% closed cell foam (see col. 5, lines 10-13).

With respect to Claims 28, 30, and 31, given Smith teaches the same method steps as claimed, it would be expected that Smith's product would have the same thermal conductivity.

With respect to Claims 19 and 20, Smith teaches making a closed cell foam using a composition of 1-1-difluoroethane, ethanol or methanol (an alcohol), and 1,1,1,2-tetrafluoro-ethane as blowing agents (see abstract; col. 3, line 4 through col. 4, line 12). Further additives are not required given their claimed optional presence.

Smith's list of suitable secondary blowing agents includes ethanol and methanol, and Smith's lists of suitable tertiary blowing agents include 1,1,1,2-tetrafluoro-ethane as blowing agents.

*Merck & Co. v. Biocraft Labs.* taught that a references that "discloses a multitude of effective combinations does not render any particular formulation less obvious" *Merck & Co. v. Biocraft Labs.*, 874 F.2d 804, 807, 10 USPQ2d 1843, 1846 (Fed. Cir. 1989). Thus, Smith's teaching of a multitude of effective combinations of blowing agents does not render any particular formulation of blowing agents less obvious.

Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to select ethanol or methanol among Smith's secondary blowing agents and 1,1,1,2-tetrafluoro-ethane among Smith's tertiary blowing agents since Smith's listing constitutes obvious combinations of blowing agents.

With respect to Claims 22 and 23, 1-1-difluoroethane is present at 50 to 90% by weight (see col. 3, lines 4-8), and 1,1,1,2-tetrafluoro-ethane is present at less than 15% by weight (see col. 3, lines 28-33). Such a combination provides for a ratio of 3 to 6, which is at least 1.5 (Claim 22). While allowing for about 10% secondary blowing agent (see col. 3, lines 9-13), such a combination further provides for their collective presence to be 65-90%, which is more than 60% by weight (Claim 23).

With respect to Claims 21 and 36, Smith further teaches using carbon dioxide and 1,1,1,2-tetrafluoro-ethane as the tertiary blowing agent (see abstract; col. 3, lines 4-8; and col. 3, line 28 through col. 4, line 12).

"It is *prima facie* obvious to combine two compositions each of which is taught by the prior art to be useful for the same purpose, in order to form a third composition to be used for the very same purpose.... [T]he idea of combining them flows logically from their having been individually taught in the prior art." *In re Kerkhoven*, 626 F.2d 846, 850, 205 USPQ 1069, 1072 (CCPA 1980). See MPEP 2144.06.

This, it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine carbon dioxide and 1,1,1,2-tetrafluoro-ethane as the tertiary blowing agent since Smith teaches their use for the same purpose.

Smith does not appear to explicitly teach that the presence and ratio of 1-1-difluoroethane and 1,1,1,2-tetrafluoroethane is within the claimed range (e.g., more than 80%; greater than 1 and at most 4).

However, in this regard, Smith teaches using blowing agents such as 1,1,1,2-tetrafluoro-ethane (HFC-134a) of low solubility and high vapor pressure decreases foam cell size (see col. 4, lines 18-51). As such, Smith recognizes that quantity of 1,1,1,2-tetrafluoro-ethane (HFC-134a), and thus presence and ratio of 1-1-difluoroethane and 1,1,1,2-tetrafluoroethane, is a result-effective variable. Since presence and ratio of 1-1-difluoroethane and 1,1,1,2-tetrafluoroethane is a result-effective variable, one of ordinary skill in the art would have obviously been motivated to determine the optimum presence and ratio of 1-1-difluoroethane and 1,1,1,2-tetrafluoroethane applied in the

process of Smith through routine experimentation based upon achieving slightly smaller large cell foam. Such obvious quantity of 1,1,1,2-tetrafluoro-ethane (HFC-134a) is 17%. With 1-1-difluoroethane present at 65%, the combination would be 82%, which meets the claimed limitation of greater than 80%, and a ratio of 4, which meets the claimed limitation of greater than 1 and at most 4.

With respect to Claims 32 and 33, Smith's teaching of 1-1-difluoroethane present at 65% and the obviousness of 1,1,1,2-tetrafluoroethane present at 17% by weight provides for a ratio of 4, which is at least 1.5 (Claim 32) and at least 2.3 (Claims 33).

With respect to Claim 34, Smith does not appear to explicitly teach that the presence of 1-1-difluoroethane and 1,1,1,2-tetrafluoroethane is within the claimed range (e.g., more than 90%).

However, in this regard, Smith teaches using blowing agents such as 1,1,1,2-tetrafluoro-ethane (HFC-134a) of low solubility and high vapor pressure decreases foam cell size (see col. 4, lines 18-51). As such, Smith recognizes that quantity of 1,1,1,2-tetrafluoro-ethane (HFC-134a), and thus presence 1-1-difluoroethane and 1,1,1,2-tetrafluoroethane, is a result-effective variable. Since presence of 1-1-difluoroethane and 1,1,1,2-tetrafluoroethane is a result-effective variable, one of ordinary skill in the art would have obviously been motivated to determine the optimum presence of 1-1-difluoroethane and 1,1,1,2-tetrafluoroethane applied in the process of Smith through routine experimentation based upon achieving slightly smaller large cell foam. Such obvious quantity of 1,1,1,2-tetrafluoro-ethane (HFC-134a) is 27%. With 1-1-

difluoroethane present at 65%, the combination would be 91%, which meets the claimed limitation of more than 90%.

With respect to Claim 35, Smith does not appear to explicitly teach that the ratio of 1-1-difluoroethane and 1,1,1,2-tetrafluoroethane is within the claimed range (e.g., at most 3.5).

However, in this regard, Smith teaches using blowing agents such as 1,1,1,2-tetrafluoro-ethane (HFC-134a) of low solubility and high vapor pressure decreases foam cell size (see col. 4, lines 18-51). As such, Smith recognizes that quantity of 1,1,1,2-tetrafluoro-ethane (HFC-134a), and thus ratio of 1-1-difluoroethane and 1,1,1,2-tetrafluoroethane, is a result-effective variable. Since ratio of 1-1-difluoroethane and 1,1,1,2-tetrafluoroethane is a result-effective variable, one of ordinary skill in the art would have obviously been motivated to determine the optimum ratio of 1-1-difluoroethane and 1,1,1,2-tetrafluoroethane applied in the process of Smith through routine experimentation based upon achieving slightly smaller large cell foam. Such obvious quantity of 1,1,1,2-tetrafluoro-ethane (HFC-134a) is 19%. With 1-1-difluoroethane present at 65%, the combination would be a ratio of 3.4, which meets the claimed limitation of at most 3.5.

***Response to Arguments***

Applicant's arguments filed 29 September 2008 and 07 November 2008 have been fully considered but they are not persuasive.

Applicant argues with respect to the double patenting; 35 USC § 101; and 35 USC § 112, second paragraph, rejections. Applicant's arguments appear to be on the grounds that:

1) The newly amended claim language obviates the double patenting; 35 USC § 101; and 35 USC § 112, second paragraph, rejections.

Applicant argues with respect to the 35 USC § 102(b) and 35 USC § 103(a) rejections. Applicant's arguments appear to be on the grounds that:

2) The newly claimed presence and ratio of 1-1-difluoroethane to 1,1,1,2-tetrafluoroethane overcomes the rejection of Claim 14 and claims depending from Claim 14.

3) Specifically, Smith teaches not to have more than 15% of 1,1,1,2-tetrafluoroethane.

The Applicant's arguments are addressed as follows:

1) In view of Applicant's amendments, the Examiner withdraws the previously set forth double patenting; 35 USC § 101; and 35 USC § 112, second paragraph, rejections as detailed in the Office Action dated 03 April 2008.

2) Applicant's arguments with respect to newly claimed presence and ratio of 1-1-difluoroethane to 1,1,1,2-tetrafluoroethane have been considered but are moot in view of the new ground of rejection

3) As recited above, Smith teaches using blowing agents such as 1,1,1,2-tetrafluoro-ethane (HFC-134a) of low solubility and high vapor pressure decreases foam cell size (see col. 4, lines 18-51). As such, Smith recognizes that quantity of 1,1,1,2-

tetrafluoro-ethane (HFC-134a), and thus presence and ratio of 1-1-difluoroethane and 1,1,1,2-tetrafluoroethane, is a result-effective variable. Since presence and ratio of 1-1-difluoroethane and 1,1,1,2-tetrafluoroethane is a result-effective variable, one of ordinary skill in the art would have obviously been motivated to determine the optimum presence and ratio of 1-1-difluoroethane and 1,1,1,2-tetrafluoroethane applied in the process of Smith through routine experimentation based upon achieving slightly smaller large cell foam.

***Conclusion***

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL.** See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Patrick Butler whose telephone number is (571) 272-

8517. The examiner can normally be reached on Mon.-Thu. 7:30 a.m.-5 p.m. and alternating Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Christina Johnson can be reached on (571) 272-1176. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/P. B./
Examiner, Art Unit 1791

/Christina Johnson/
Supervisory Patent Examiner, Art Unit 1791